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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,121	03/23/2000	HIDEKAZU KOBAYASHI	105034	3415

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
ROY, SIKHA	
ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 01/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/509,121	KOBAYASHI, HIDEKAZU	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-38 and 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The Amendment, filed on October 31, 2002 has been entered and is acknowledged by the Examiner.

Cancellation of claims 39,41 and 42 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-19, 28-32 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent 5,739,635 to Wakimoto.

Referring to claim 15 Wakimoto discloses (column 2 lines 1-10,53-58, Fig. 3) an electroluminescent device comprising a light emitting layer 3 including organic polymer (organic compound such as dicyanomethalene derivatives, quinacridone derivatives) emitting light in the visible spectrum between the anode 2 and cathode 1 and a thin film layer 6b (electron-injecting layer of an insulating thin film) disposed between the light emitting layer 3 and the cathode 1. This thin film layer 6b made of alkaline metal compound such as alkaline metal halide, alkaline metal oxides having a very low work function acts as an insulator (column 2 lines 59-67) and hence inherently works as a means for suppressing the current flowing through the light-emitting layer and not contributing to the light emission, thus providing an organic EL device capable of emitting light for a long time.

Claim 28 essentially recites the same limitations as of claim 15 and hence is rejected for the same reason. The Examiner notes that the claim limitation that "light-emitting layer formed by a printing method " is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

Regarding claims 16 and 29, Wakimoto discloses (column 2 lines5-8 Fig. 3) that thin-film layer 6b inherently working as a means for suppressing the current flowing through the light-emitting layer and not contributing to the light emission is disposed between the cathode 1 and the light emitting layer 3.

Regarding claims 17 and 18 Wakimoto discloses (column 2 lines 59-66) that the means for suppressing the current flowing through the light-emitting layer and not contributing to the light emission (electron injecting layer) is made of alkaline metal oxides and alkaline metal halides.

Claims 30 and 31 recite the same limitations as of claims 17 and 18 and hence are rejected for the same reason.

Regarding claims 19 and 32, Wakimoto discloses (column 2 lines 55,56, Fig.3) a thin film layer 4 disposed between the anode 2 and light emitting layer 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20,21,26,27 and 33,34,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,739,635 to Wakimoto.

Regarding claims 20 and 33 Wakimoto discloses (column 4 lines 38-40 Fig.4) an electroluminescent device comprising a hole injection (hole transport) layer 4a having high electric conductivity disposed between the light emitting layer and the anode. Regarding claim 20 and 33, Wakimoto discloses the claimed invention except for the limitation of thickness of the hole injection layer being not less than 100nm. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to specify the thickness of the hole injection layer (4a) to be not less than 100nm, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claims 21 and 34 Wakimoto discloses (column 4 line 12, Fig. 4) an electroluminescent device comprising a buffer layer (layer 4b) having electrical conductivity disposed between the light emitting layer and the anode.

Regarding claim 21 and 34, Wakimoto discloses the claimed invention except for the limitation of thickness of the buffer layer being not less than 100nm. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to specify the thickness of the buffer layer (4b) to be not less than 100nm, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claims 26 and 27 the Examiner notes that the claim limitation that "light emitting layer being formed by a printing method which is an ink-jet method " is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the organic electroluminescent device disclosed by Wakimoto is at least a fully functional equivalent to the Applicant's claimed electroluminescent device having the light emitting layer formed by ink-jet method.

Claim 40 recites the same limitations as of claim 27 and hence is rejected for the same reason.

Claims 22,23,25 and 35, 36, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,739,635 to Wakimoto in view of U. S. Patent 6,111,356 to Roitman et al.

Referring to claims 22 and 23 Wakimoto discloses a light emitting layer including organic compounds. Wakimoto does not disclose light emitting layer including at least one of polyfluorene and derivative of polyfluorene, poly(p-phenylenevinylene) and derivative of poly(p-phenylenevinylene).

Roitman et al. in analogous art of organic light emitting devices disclose (column 2 lines 56-59) the polymer layers of electroluminescent material include polyfluorene and polyphenylenevinylene. Roitman et al. further note (column 4 lines 44-56) that the layers formed of these polymers maintain their mechanical integrity, resistance to lifting off and electronic characteristics through the process of development and hence are preferred.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include polyfluorene and polyphenylenevinylene in the light emitting layer as taught by Roitman et al. in the electroluminescent device of Wakimoto for their maintainance of mechanical integrity, resistance to lifting off and electronic characteristics through the process of development.

Claims 35 and 36 recite the same limitations as of claims 22 and 23 respectively and hence are rejected for the same reason.

Regarding claim 25 Roitman et al. disclose (column 3 lines 34-53) the light emitting layer formed by depositing a plurality of layers. It is further disclosed that for

different colored device EL layer of each color is deposited separately and patterned such that different color pixels have different EL material.

Claim 38 recites the same limitations as of claim 25 and hence is rejected for the same reason.

Claim 24 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,739,635 to Wakimoto in view of JP 10-36487.

Regarding claims 24 and 37 Wakimoto does not exemplify the degree of organic polymerization being at least two.

JP 10-36487 in relevant art of organic electroluminescent device discloses the degree of polymerization of the organic polymer is desirable between 1 and 2000. It is noted that depending on the degree of polymerization the fluorescent material of a polymer-based EL element can be produced by a simple process, has a well-defined structure and soluble in organic solvents for easy film formation. Regarding claim 24, Wakimoto in view of JP 10-36487 disclose the claimed invention except for degree of polymerization being at least 2. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use . *In re Leshin*, 125 USPQ 416. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have selected the organic polymer of Wakimoto and JP 10-36487 to be at least 2, since the selection of known materials for a known purpose is within the skill of the art.

Response to Arguments

Applicant's arguments filed October 31, 2002 have been fully considered but they are not persuasive.

In response to Applicant's argument that Wakimoto does not disclose or suggest an electroluminescent device including a means for suppressing current flowing through the light emitting layer and not contributing to light emission, disposed between light emitting layer and cathode the Examiner respectfully disagrees. The Examiner notes that Wakimoto discloses that the thin film layer 6b disposed between the light emitting layer 3 and cathode 1 (Fig. 3) made of alkaline metal compound such as alkaline metal halide, alkaline metal oxides having a very low work function acts as an insulator (column 2 lines 59-67) and hence inherently works as a means for suppressing the current flowing through the light-emitting layer and not contributing to the light emission. Wakimoto further discloses that this organic EL device having cathode laminated with the layer of alkaline - metal – compound has improved emission efficiency and stably emits light at high luminance upon application of low voltage for a long time (column 6 lines 20-30).

Regarding to Applicant's argument that none of the applied references disclose light emitting layer comprising polymer material the Examiner respectfully disagrees. Wakimoto discloses (column 3 lines 28-60) the light emitting layer made of organic host substance such as cumarin derivatives, dicyanomethalene derivatives, quinacridone derivatives which are organic polymers (compounds having molecules with long chain) and guest substances selected from fluorescent dyes. Kanai et al. disclose the organic

luminescent layer made up of hole transport and electron transport layers comprises of aromatic diamine compounds having tertiary aromatic amine units which are organic polymers.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SR

Sikha Roy
Patent Examiner
Art Unit 2879

NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800